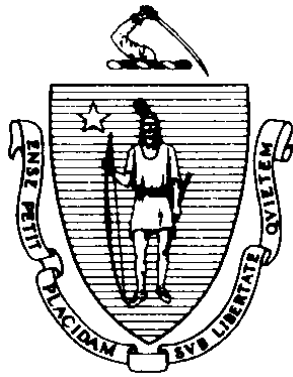


# BMI Screening Guidelines for Schools

Massachusetts Department of Public Health



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Division of Prevention and Wellness

2009

# **BMI-for-Age Screening Guidelines for Schools**

## **Massachusetts Department of Public Health**

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## Acknowledgements

This manual is an update of the “Comprehensive Growth Screening Guidelines for Schools” originally developed and published in 2007 by the Massachusetts Department of Public Health. The state regulations on Physical Examination of School Children, 105 CMR 200.000, were revised in 2009. These guidelines reflect changes made in the regulations relative to height and weight measurements.

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# BMI Screening Guidelines for Schools

## I. Introduction

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The goal of the Massachusetts Department of Public Health's (MDPH) Body Mass Index (BMI) Screening Guidelines for Schools is to provide school staff with the necessary information and tools to successfully collect heights and weights, calculate BMI, effectively communicate results to parents and guardians in a sensitive and confidential manner, and provide the data to the MDPH. Consistent with this goal, schools are required by Massachusetts General Law to provide health screenings for students (M.G.L. Chapter 71, Section 57 and 105 CMR 200.000) and follow up with the results of these screenings with families and referrals to primary health care providers as necessary.

In February 2009, Massachusetts promulgated amendments to the regulations on Physical Examination of School Children, 105 CMR 200.000, to improve the screening and monitoring of the health assessment of children across the Commonwealth. Among other changes, the amended regulations require screening for height and weight and the recording and reporting of the BMI for all students in grades 1, 4, 7 and 10 (or of comparable age). The components of the Massachusetts Regulations 105 CMR 200.000 for the Physical Examination of Children include:

- Prior notification of BMI screenings and the benefits of the screening to all parents and guardians by any reasonable means;
- Accurate measurement of height and weight and the calculation of BMI for students in grades 1, 4, 7, and 10 (or by a student's 7th, 10th, 13th and 16th birthday in un-graded classrooms) by trained individuals with consideration for privacy of the student during the screening process;
- Direct, confidential notification of parents or guardians of the child's screening results even if the child or adolescent is within normal BMI range;
- Provision of easily understood informational materials that explain BMI screenings to parents or guardians;
- Identification of resources that support healthy eating and active living in the community;
- Referral to health care provider if the student's BMI is below the 5<sup>th</sup> percentile or above the 85<sup>th</sup> percentile;
- Documentation of the student's BMI in the student's health record and;
- Submission of BMI results to MDPH using appropriate data reporting tools

Further, the BMI information will enable school health professionals to:

- Identify students who may be at nutritional risk.
- Identify students who are at risk for eating disorders.
- Identify students who are underweight, overweight or obese or at risk of becoming

overweight or underweight.

- Encourage discussions between families and health care providers about their child's growth and development.
- Promote healthy eating and active living in the school community.
- Assist the MDPH in monitoring BMI trends among children and adolescents in communities across the state.

Overweight and underweight children are at risk for a variety of health problems, making early identification of weight status important. Eating disorders such as anorexia, bulimia and binge eating can result in both serious long-term health problems and poor school performance. Overweight and obesity in children and adolescents are risk factors for a variety of serious health conditions such as Type 2 Diabetes and cardiovascular disease (*Comprehensive School Health Manual*, 2007).

These guidelines include a review of the Massachusetts laws and regulations related to BMI screening of school-age children, information on the proper use and maintenance of equipment, protocols for collecting accurate measurements, recommendations for notification of parents and guardians about screening results, and suggestions for materials for referrals and resources to promote health within the community.

While it is important that height and weight measurements be done accurately, it is equally important that they be done in a respectful and sensitive manner (Ikeda and Crawford, 2000). A successful BMI screening program benefits individual students and the entire school community by identifying risk factors for health problems. BMI information can help increase the awareness of the school community about the importance of healthy eating and active living. Every student in Massachusetts can benefit from eating well and being physically active.

## **II. Massachusetts General Laws and Regulations Pertaining to Growth Screening**

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### **105 CMR 200.500: Annual Assessment of Physical Growth and Development**

*Each school committee or board of health shall adopt policies and procedures to ensure that the Body Mass Index (BMI) and corresponding percentile of each student in grades 1, 4, 7, and 10 (or, in the case of ungraded classrooms, by a student's 7th, 10th, 13th and 16th birthday) is calculated and reported directly and confidentially to a parent or legal guardian.*

*(A) Measurement of weight and height shall be done by trained school personnel or others approved by the Department for this purpose, in accordance with guidelines of the Department. Prior notice of the screening and the benefits of the screening shall be provided to the parent or legal guardian by any reasonable means. Every effort shall be made to protect the privacy of the student during the screening process and in the communication of information about the student's BMI to the parent or legal guardian.*

*(B) A report of each student's BMI and percentile, along with easily understood informational and explanatory materials provided or approved by the Department on BMI, healthy eating and physical activity shall be mailed or otherwise directly communicated in writing to the parent or legal guardian of the student, in accordance with guidelines of the Department. The materials shall indicate that questions about healthy weight should be discussed with the student's primary care provider.*

*(C) The Department shall be provided annually with student BMI data, by school or school district, as specified in guidelines of the Department.*

*(D) A copy of the student's BMI shall be maintained in the student's school health record. With the consent of the parent or legal guardian, a copy shall be provided to the student's primary care provider.*

*(E) Parent(s) and legal guardian(s) shall be provided with an opportunity to request, in writing, that their child not participate in the program.*

*(F) These requirements shall be met by June 30, 2010 by public school systems receiving direct funding from the Department for school nursing services as of the date of promulgation of these regulations and by June 30, 2011 by all other public schools.*

### **III. Essential Elements of Body Mass Index (BMI) Screening**

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#### **A. Prior notification of students, parents or guardians, and providers**

- Notify parents or guardians before BMI screening is done is an essential component of program success. Parents and guardians, students, school administrators and staff should all be informed about the purpose and process of the school's BMI screening initiative prior to collecting the BMI.
- Information on the use and importance of BMI screening, evaluation and the method of reporting the results should be provided to all parents and guardians. (See Appendix A for sample letters of prior notification.)
- In addition to written notification to all involved, it may be helpful to present information at parent and community meetings about the program, including what the results mean and resources for learning more about promoting good nutrition, physical activity and maintaining a healthy weight.
- Parental pre-notification can take many forms including a notice in a school publication, hand-carried notes to parents or guardians, or as part of the student handbook.
- **Parents and guardians must be given the opportunity to waive their child's BMI screening at school by submitting a written request.**

- Adequate notification of **school administration and staff** will enhance support for the BMI screening program and minimize the barriers to securing appropriate space and scheduling time out of class.
- Local **primary health care providers** will be better able to address follow-up needs and answer questions from concerned parents or guardians if they are informed of the program in advance and any resources available through the school. The Department of Public Health will work with its partners to provide advance notice about the screening initiative to primary care providers.

#### **B. Proper supervision of appropriately trained staff under the direction of the school nurse**

- The school nurse has the responsibility for training, monitoring and follow-up of all screening activities.
- To improve accuracy, DPH recommends that at least two staff conduct the BMI screening: one to measure the child and one to record the data. This greatly reduces recording errors.
- School nurses and any other staff conducting screenings should participate in an MDPH-sponsored training.
- The school nurse has the responsibility for training, monitoring and follow-up of all screening activities.
- Training should include:
  1. Proper use of equipment for accurate and precise measurement;
  2. Review of forms for the recording of information;
  3. Emphasis on the importance of privacy and confidentiality for the students; and
  4. Appropriate and sensitive communication with students regarding height and weight measurement (e.g., saying “Let’s check your weight” instead of “Let’s see how big you are”; reassuring students that kids’ bodies come in different sizes and shapes; and avoiding labels such as “obese”, “overweight”, “too thin”, or “too short”).

#### **C. Properly prepared and equipped space for screening**

- There should be adequate time for screening, as well as provisions for student supervision, access to proper equipment, and any special accommodations that are necessary to ensure appropriate assessment and individual privacy.

#### **D. Appropriate and well-maintained screening equipment**

- Use appropriate equipment that has been properly maintained and calibrated annually or more frequently as necessary. (See Section 4: Equipment Maintenance and Calibration.)

#### **E. Protocols to assure privacy of the screening process and confidentiality of results**

- Each student should be weighed and measured in private with no other students present.

Students react in a variety of ways to being weighed and measured at school. Girls are most often concerned about being overweight regardless of their actual size. Boys worry about being short and too thin (Pennsylvania Department of Health, 2004). Screeners should be prepared to be objective, calm and open to students' concerns. Consider the question, "How can this task be done in a way that will promote a positive [body] image and high self-esteem in youngsters of all sizes and shapes?" (Ikeda and Crawford).

- Space should be arranged so that confidentiality is assured, in terms of both sight and sound. In order to promote confidentiality of results and reduce anxiety, all students should be weighed and measured facing away from the scales.
- Students' BMI screening results are part of the health record and, as such, are strictly confidential and should not be discussed with anyone other than the student and his/her parent or guardian and healthcare provider. Some students may need to meet with the school nurse at a later time to discuss their concerns; be sure to do so in a space that will respect the student's privacy.
- Care should be taken that findings are never accessible to other students or shared with staff and are communicated to parents and guardians in a direct and confidential manner.



## IV. Equipment and Tools for Proper Measurement of Height and Weight

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### A. Required Equipment



**For measuring weight, use a properly calibrated balance-beam or strain-gauge floor scale (mechanical or digital) that:**

- Can weigh in 0.1 kg or ¼ lb increments;
- Has a stable platform;
- Has the capacity to be “zeroed” after each weight is taken; and
- Has the capacity to be calibrated.

**For measuring height, use a stadiometer that:**

- Is able to read to 0.1 cm or 1/8 inch;
- Has a large stable base; and
- Has a horizontal headpiece that is at least 3 inches wide that can be brought into contact with the most superior part of the head (i.e., the crown).



### B. Calibration of Equipment and Use of Up-to-Date Screening Tools

**Check the equipment regularly to ensure accurate measurements.**

- Scales should be calibrated on a routine basis.
  - Use known weights (a set of standard weights purchased from a sports store) on the scale to check accuracy.
  - Re-calibrate if the scale has been moved to a different surface.
  - Portable digital scales, frequently moved, should be calibrated monthly.
  - For scales that are not moved or used excessively, calibrate annually by contacting your town Department of Weights and Measures.
- Check the stadiometer regularly to be sure the base is stable and measures are accurate.

## **V. Protocols for Measuring Height and Weight**

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To accurately weigh and measure students, the following procedures should be followed:

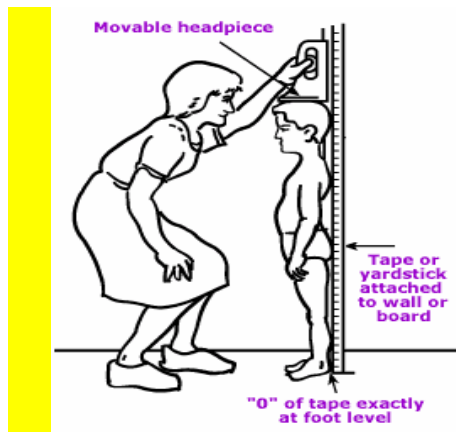
### **A. Weight**

- Make sure that the scale is on a firm surface, preferably an uncarpeted floor.
- Set the scale at zero reading.
- Have student remove shoes.
- Have student remove heavy outer clothing, such as sweater, jacket, vest and belts.
- Have student empty their pockets of heavy objects such as cell phones or iPods.
- Have student step on scale platform, facing away from the scale, with both feet on platform, and remain still.
- Read weight value to nearest  $\frac{1}{4}$  pound or .1 (1/10) kilogram.
- Record weight immediately on the data form before student gets off the scale.
- If using a balance-beam scale, return weights to zero position.

### **B. Height**

- Have student remove shoes and hat.
- Have student remove hair ornaments, buns, and braids to extent possible (note on chart if unable to obtain an accurate measurement, don't "guesstimate" height of hairdo).
- Have student stand on footplate portion with back against stadiometer rule.
- Have student bring legs together, contact at some point (whatever touches first).
- Make sure that the knees are not bent, arms are at sides, and shoulders are relaxed.
- Make sure that the back of the student's body touches/has contact with stadiometer at some point.
- Make sure that the body is in a straight line (mid-axillary line parallel to stadiometer). Check to see if the student's head is in appropriate position. You should be able to draw a straight (perpendicular) line from the back of the board, past the ear opening and the top of the cheek bone. You can use a pencil or ruler to help check the line. This is called the Frankfort plane.
- Lower headpiece snugly to crown of head with sufficient pressure to flatten hair.
- Read value at eye level in an upward direction (from lowest to higher number).
- Measure to nearest .1 cm or 1/8 inch and record value.

- Repeat measurement, having the child line up again, and record appropriate value immediately on data form.
- Repeat measurements should agree within  $\frac{1}{2}$  cm or  $\frac{1}{4}$  inch. If they do not, repeat measurement a third time.



(PA Department of Health, 2004)

### Reading Height Measurements

- Read at eye level
- Count visible lines
- If the arrow points at a line, count that line
- If the arrow points between lines, read to nearest line
- Use .5 ( $\frac{1}{2}$ ) line as guide
- Read in upward direction (from lower to higher number)

## VI. Measuring Non-Ambulatory Students

Assessing the weight status of non-ambulatory students with special health care needs requires special consideration as children may not be able to stand up or lie flat. Alternate methods are available for measuring children requiring special accommodations.

In general, the purpose of measurements for children who may have atypical growth patterns should be for monitoring the progress of the individual child over time and not used to compare the child with others, even those who may have similar conditions. Remember that BMI is used to indicate measures of body fatness. With some conditions that involve muscle wasting and abnormal bone growth, the standard BMI reference percentile curves would not be an appropriate comparison point.

(See Appendix D for more detailed information on measuring non-ambulatory students.)

## VII. Calculating BMI and Recording Measurements

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**BMI for students is to be calculated and recorded, using proper tools for calculating BMI. Use one of the following:**

- BMI Table, found online at the CDC website  
<http://www.cdc.gov/nccdphp/dnpa/healthyweight/assessing/bmi/00binaries/bmi-tables.pdf>
- BMI Wheel
- BMI calculation computer software
- BMI Calculator (<http://apps.nccd.cdc.gov/dnpabmi/Calculator.aspx>)
- Children's BMI Tool for Schools  
([http://www.cdc.gov/healthyweight/assessing/bmi/childrens\\_bmi/tool\\_for\\_schools.html](http://www.cdc.gov/healthyweight/assessing/bmi/childrens_bmi/tool_for_schools.html))

**Plot results in a gender-appropriate BMI-for-Age chart.** BMI-for-Age Percentile charts are available on the CDC's website [http://www.cdc.gov/growthcharts/clinical\\_charts.htm](http://www.cdc.gov/growthcharts/clinical_charts.htm) **Copies in Appendix G**

**Record the information of student BMI screening on a Massachusetts School Health Record.** (See Massachusetts Comprehensive School Health Manual 2007 for sample forms.)

## VIII. Parent Communication, Referral and Follow-up

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The information provided for parents and guardians along with the results of the school-based BMI screenings gives them the knowledge they need to begin a conversation with their health care provider about their child's weight status, eating and physical activity behaviors. While the state regulations require schools screen students in grades 1, 4, 7 and 10, all children should have an annual BMI screening as a part of their regular physical examination at their primary care providers' office.

Individual student BMI screening results should be reviewed over time and individual characteristics of each student should be taken into consideration when evaluating the data. It is important to note that BMI does not differentiate between fat tissue and lean tissue (for example, an athlete who has more muscle may have a higher-than-expected BMI for his/her height and weight).

To avoid stigmatization of any student and protect the confidentiality of individual screening results, BMI screening results should be mailed or otherwise directly communicated to the parents and guardians, and not sent home with the student. When possible, for screening results that are significantly out of range or of particular concern, it may be appropriate for the school nurse to personalize the letter or place a phone call to the student's parents or guardians.

Because BMI measurement is a key factor in tracking a student's overall health status, all parents and guardians of students that have been screened should be provided with their child's BMI results, no matter if they fall outside or within the healthy weight range. Parents or guardians should also be provided with guidelines on how to interpret the BMI data for their child.

Parents or guardians should be reminded that the BMI results are not meant to be a diagnosis. BMI is just one piece of information health care professionals use to determine a child's health status because there are a number of factors that can affect BMI.

Parents or guardians should be encouraged to consult their child's primary care provider if the student's height/weight measurements are below the 5<sup>th</sup> percentile BMI, above the 85<sup>th</sup> percentile, or indicate a possible deviation from an expected growth curve for that child. The school nurse is responsible for referring students through their parents or guardians for follow-up with the child's healthcare provider.

Finally, it is important to include information with the BMI screening results about resources that will help students and parents or guardians practice healthy lifestyle habits to avoid future health problems. The MDPH has developed and identified a variety of resources for schools to use. Materials will be accessible through the state's *Mass in Motion* website at [www.mass.gov/massinmotion/](http://www.mass.gov/massinmotion/). Resources and referrals for nutrition, physical education, recreation and mental health counseling, stress management, and dysfunctional eating can be incorporated in messages to families in the school community. (See Appendix E for a list of resources that can be used to provide families with additional information concerning healthy weight.)

## **BMI Screening of Children and Adolescents in the School Setting**

### **Checklist**

- ☐ Notify students, parents or guardians, school staff and administrators and local primary care providers prior to implementation of the screening program. Explain the process to parents or guardians and let them know when to expect the screening results in the mail.
- ☐ Recruit and train staff.
- ☐ Review confidentiality and communication issues with screeners.
- ☐ Make sure that appropriate equipment is available and has been properly maintained and calibrated.
- ☐ Prepare space for screening. Be sure to provide a private setting for measurement of heights and weights.
- ☐ Use appropriate tools for calculating and documenting the results
- ☐ Report results to parents or guardians – respect confidentiality and mail or directly communicate in writing the results of the screening with a guide for interpreting the results and possible follow-up steps.
- ☐ Provide educational materials on healthy eating and physical activities to parents or guardians and primary health care providers. Use the resources provided in the “Resource” section of these guidelines and visit [www.mass.gov/massinmotion/](http://www.mass.gov/massinmotion/) for more information and additional resources.
- ☐ Submit BMI results to MDPH using appropriate data reporting tools.

## IX. References

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American Academy of Pediatrics (2000). *School health assessments: Policy statement*. Downloaded March 6, 2001 (<http://www.aap.org/policy/re9862.html>)

Elliott, V. (2002). Adult options for childhood obesity. Downloaded July 26, 2002 ([http://www.ama-assn.org/sci-pubs/amnews/pick\\_02/hlsa0527.htm](http://www.ama-assn.org/sci-pubs/amnews/pick_02/hlsa0527.htm))

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Pennsylvania Department of Health, Procedures for the Growth Screening Program for Pennsylvania' School-Age Population, Harrisburg, PA: June 2004.

US Preventive Services Task Force. Screening and Interventions for Overweight in Children and Adolescents: Recommendation Statement. *Pediatrics*, Vol. 116 No. 1 July 2005; 205-209.

US Centers for Disease Control and Prevention (CDC), CDC Growth Charts: United States (<http://www.cdc.gov/nchs/about/major/nhanes/growthcharts/background.htm>)

## **X. Appendices – Sample Materials and Resources**

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- A. Sample Pre-Screening Notification Letters
- B. Template for Reporting Individual Screening Results
- C. Sample Physician Post-Screening Notification Letter
- D. Guidelines for Measuring Non-Ambulatory Students
- E. Eating Disorders and Undernutrition
- F. Sample Resources
- G.. BMI for Weight Charts



## A. Sample Pre-Screening Notification Letters

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### Sample Letter 1: Notification to School Faculty and Staff

[School Letterhead]

[Date]

Dear Faculty and Staff:

I am writing to inform you about our Body Mass Index (BMI) screening program so that you, along with students, parents, guardians, and the community, can help make this year's program a success.

The state's BMI Screening mandate (M.G.L. c.71 s.57) requires that all schools collect height and weight measurements of students in grades 1, 4, 7, and 10. These measurements will be used to calculate BMI and the results will be reported to students' parents or guardians and to the Massachusetts Department of Public Health. BMI is a "weight for height for age" index that can be a useful tool in early identification of possible health risk factors among children and youth.

The results of the BMI screening will be kept confidential in each student's school health record and will be mailed or directly communicated in writing to the parents or guardians; not sent home with the student. The parent or guardian letter will include a description of the screening program and interpretation of the results as well as recommendations to share the results with their child's primary health care provider.

Because students may react in a variety of ways to the BMI screening in school, it is important that you are aware that this screening is taking place so that you can respond appropriately. For example, if a child makes a negative comment about his/her body, a sensitive response might be, "Kids come in different sizes and shapes." You can help by being objective and open about your students' concerns about their weight in your responses.

The screenings will be conducted on [Insert dates] in [Insert locations]. Letters with information for parents or guardians will be sent on [Insert date].

This is an opportunity for our school to coordinate efforts to communicate with students, parents or guardians, and the community about the positive steps our school is taking to support healthy eating and physical activity. At the present time, we provide [Insert programs that are coordinated within the district and/or school to encourage healthy eating and active living for both students and staff], and are planning [Insert information about the positive things you would like to start at your school (e.g., school health council, parent presentation, physical education programs or health education classes)]

Please take a moment to stop by my office, or email me to let me know if you have any questions about this screening program or if you'd like to be a part of our school's efforts to create a healthier environment. Together we can make a real difference in the health and wellness of our students!

Thank you for your time and consideration.

Sincerely,

School Nurse [you may also consider having the principal co-sign the letter]

## Sample Letter 2: Pre-Screening Notice to Parents and Guardians

[School Letterhead]

[Date]

Dear Parent or Guardian:

This letter is to let you know about the Body Mass Index (BMI) Screening Program that will be happening soon at your child's school.

A Body Mass Index, or BMI, is a measure that is used to show a person's "weight for height for age." It is calculated using an individual's height and weight. Just like a blood pressure reading or an eye screening test, a BMI can be a useful tool in identifying possible health risks.

The purpose of the BMI Screening Program is to give you information about your child's weight status and ideas for living a healthy life. In *[name of school or district]*, we address our children's health and wellness with a comprehensive approach that includes health screenings and *[Insert list of initiatives]*.

Massachusetts schools have taken heights and weights of students each year since the 1950's. According to the state's new BMI screening regulation which passed in April 2009, schools must now collect the heights and weights of students in grades 1, 4, 7 and 10. Each child's height and weight will then be used to calculate their BMI. The results will be mailed home or directly communicated in writing to you.

The school nurse will supervise your child's screening and will make sure your child's privacy is respected at all times. The results of your child's height, weight, and BMI measurements are strictly confidential – the results will be kept in your child's school health record and given to you directly by *[state what form of direct communication will be used]*.

A BMI does not tell the whole story about your child's health status. BMI does not distinguish between fat and muscle. For example, if a child is very athletic and has a lot of muscle, his or her BMI may be high even though he or she is not overweight. That is why we encourage you to share the results with your child's health care provider. Your child's doctor or nurse is in the best position to evaluate his or her overall health and can explain the results of his or her BMI screening. They can also talk with you about whether there are steps you can take to encourage healthy eating and physical activity.

We are very interested in making sure that all our students are healthy. This year, the BMI screening will take place in *[insert month of screening]*. All children in grades 1, 4, 7 and 10 will have their height and weight measured and will have their Body Mass Index (BMI) calculated.

Please feel free to call me at *[insert phone number]* with any questions you may have about the BMI screening. Additional information about children's wellness and fitness is available upon request or you may access the state's resources at [www.mass.gov/massinmotion/](http://www.mass.gov/massinmotion/).

Sincerely,

School Nurse *[you may also consider having the principal co-sign the letter]*

### Sample Letter 3: Pre-screening Notification of Local Primary Care Providers

[School Letterhead]

Dear Primary Care Provider:

The health and wellness of our children is a national priority. However, the latest federal data continue to show increases in rates of childhood obesity and incidence of eating disorders. The United States Department of Health and Human Services estimates that by 2010, 20% of children and youth in the United States will be considered obese. Researchers have found that childhood obesity is associated with a number of disorders including hypertension, insulin resistance, sleep apnea, menstrual abnormalities, and orthopedic problems (GAO,2006)

In February 2009, Massachusetts promulgated amendments to the regulations on Physical Examination of School Children, 105 CMR 200.000, to improve the screening and monitoring of the health assessment of children across the Commonwealth. Among other changes, the amended regulations require screening for height and weight and the recording and reporting of the BMI for all students in grades 1, 4, 7 and 10 (or of comparable age). The *[insert school name]* will be completing its Body Mass Index (BMI) screening for students in grades 1, 4, 7 and 10 during the week of *[insert date]*. We will be measuring the height and weight of each student and calculating the BMI and BMI-for-age for each child using the Centers for Disease Control (CDC) growth charts.

Parents and guardians will be notified of the results of this screening for each of their school-age children. *[State what form of direct communication will be used]* BMI results will be mailed or directly communicated to parents and guardians of each student screened. A recommendation to discuss the results with the child's primary care provider will be made for those children whose BMI-for-age screening place them underweight ( $\leq 5^{\text{th}}$  percentile) or overweight/obese ( $\geq 85^{\text{th}}$  percentile\_ categories .

In this initiative, which is part of the Mass in Motion campaign, the Massachusetts Department of Public Health is partnering with many organizations, including the Massachusetts Chapter of the American Academy of Pediatrics, to promote healthy weight in children across the state. We encourage you to incorporate some of the nutritional information enclosed in this letter to assist you in providing your patients (and their parents and/or guardians) tools to make healthy choices.

Please be aware that the *[insert school name]* and/or the town of *[insert town name]* have several resources available to help combat obesity in our youth. *[Insert list of resources]*. Resources to promote healthy eating and physical activity can be found in the Department of Public Health's web site [www.mass.gov/massinmotion](http://www.mass.gov/massinmotion). Other resources that you may find useful include:

- Assessment of Child and Adolescent Overweight and Obesity: A Supplement to Pediatrics  
[http://pediatrics.aappublications.org/content/vol120/Supplement\\_4/index.dtl](http://pediatrics.aappublications.org/content/vol120/Supplement_4/index.dtl)
- *The Healthy Care for Healthy Kids Toolkit - Management and Treatment - Office Tools* developed by *NICHQ* and *Blue Cross Blue Shield of MA* are available at  
[http://www.nichq.org/childhood\\_obesity/toolkit\\_prevention\\_office.html](http://www.nichq.org/childhood_obesity/toolkit_prevention_office.html)

If you have any questions concerning the BMI Screening Program being implemented at the *[insert school name]* School, please contact either *[insert principal name]*, the school principal at *[insert principal's phone]* or *[insert school nurse name]*, the school nurse at *[insert phone number]*.

Thank you for your efforts to maintain the health of Massachusetts' children.

Sincerely,

School Nurse *[you may also consider having the principal co-sign the letter]*

## B. Template for Reporting Individual Screening Results

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### Screening Results for Parents and Guardians

[School Letterhead]

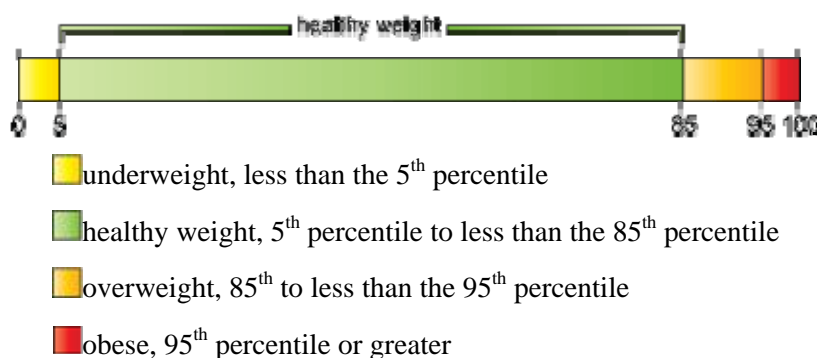
[Date]

Dear Parent or Guardian:

Your child, *[insert name of student]*, was weighed and measured as part of our school's BMI Screening Program. A Body Mass Index (BMI)-for-Age percentile was also calculated.

The purpose of the BMI Screening Program is to inform you about your child's weight status and let you know if your child is in a healthy weight range, overweight, obese, or underweight. The result of your child's BMI screening is strictly confidential, and will not be discussed with anyone other than you.

Your child's measurements were: Height: \_\_\_\_\_ Weight: \_\_\_\_\_ BMI Percentile: \_\_\_\_\_



If your child's BMI is below the 5<sup>th</sup> percentile he/she may be underweight. If your child's BMI is above the 85<sup>th</sup> percentile, he/she may be overweight or obese. You should share these results with your child's health care provider. If your child does not have a regular health care provider or you don't have health insurance for him/her, please contact us for information about obtaining health insurance coverage or finding a provider.

BMI does not tell the whole story about your child's weight status. Many factors other than height and weight can influence your child's weight such as family history. Also, BMI does not distinguish between muscle and fat. For example, if a child is very athletic and has a lot of muscle, his or her BMI may be high even though he or she is not overweight. Please see the information that has been included with this letter to help you understand what your child's BMI means and what you can do to help keep your child healthy and physically active. More information is available in the Department of Public Health's website [www.mass.gov/massinmotion/](http://www.mass.gov/massinmotion/)

If you have any questions, please call me at *[insert phone number]*.

Sincerely,

School Nurse

## C. Sample Physician Post-Screening Notification Letter

**Sample Letter : Physician notification post-client/patient screening to be included in the mailing to parents or guardians of children with BMIs below the 5<sup>th</sup> or above the 85<sup>th</sup> percentile**

[School Letterhead]

[Date]

Dear Health Care Provider [or "Physician" or name of physician]:

This letter is to notify you that your patient, [insert student name], was measured for height and weight during the [insert school name] School's Body Mass Index (BMI) Screening Program, as mandated by M.G.L. Chapter 71 Section 57 and 105 CMR 200.500 in Massachusetts. The following is the child's BMI results: BMI \_\_\_\_\_ Percentile \_\_\_\_\_

To assist in identifying community resources to promote healthy eating and physical activity, we are including a resource list [list resources]. The Massachusetts Department of Public Health's Mass in Motion website <http://www.mass.gov/massinmotion> has resources as well. Additional resource that you might find useful are the *Healthy Care for Healthy Kids Toolkit - Management and Treatment - Office Tools* available at [http://www.nichq.org/childhood\\_obesity/toolkit\\_prevention\\_office.html](http://www.nichq.org/childhood_obesity/toolkit_prevention_office.html) and *Assessment of Child and Adolescent Overweight and Obesity: A Supplement to Pediatrics* [http://pediatrics.aappublications.org/content/vol120/Supplement\\_4/index.dtl](http://pediatrics.aappublications.org/content/vol120/Supplement_4/index.dtl)

We welcome your feedback and any recommendations you may have that will help in planning for this child's school program. If you have any questions concerning the BMI Screening Program being done at the [insert school name] School, please contact either [insert principal name], the school principal at [insert principal's phone] or [insert school nurse name], the school nurse at [insert nurse's phone].

Thank you for your efforts to keep your patients and our students healthy.

Sincerely,

School Nurse

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**HEALTH CARE PROVIDER: Please complete and return to [insert School Nurse, School & Address]**

I have checked (child's name) \_\_\_\_\_ on (date) \_\_\_\_\_  
with the following findings:

BMI: \_\_\_\_\_ Percentile: \_\_\_\_\_

Recommendations:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Signature/Title: \_\_\_\_\_ Date: \_\_\_\_\_

## **D. Guidelines for Measuring Non-Ambulatory Students**

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The following is a brief sample of guidelines when measuring non-ambulatory students with special health care needs. These guidelines were compiled by Judy Salkeld, Project Director at the Brown University Institute for Community Health Promotion.

Assessing growth status of students with genetic or other medical conditions requires special consideration. In the event that it is necessary to collect height and weight information in the school setting, be sure that the screening is conducted by a health care professional such as the school nurse, occupational therapist or physical therapist. In addition, be sure that parents or guardians are also informed in advance of the screening.

In general, the purpose of measurements for children who may have atypical growth patterns should be for monitoring the progress of the individual child over time and not used to compare the child with others, even those who may have similar conditions. Remember that BMI is used to indicate measures of body fatness. With some conditions that involve muscle wasting and abnormal bone growth, the standard BMI reference percentile curves would not be an appropriate comparison point.

### **Possible options for assessing weight for children who cannot stand**

- Use bucket seat scale if child is within size and weight limits for the equipment
- Use chair scale
- Use bed scale
- Use platform scale on which a wheelchair can be placed (need to subtract weight of wheelchair)
- Caregiver holds child on scale, then subtract caregiver's weight (make note of procedure used to obtain weight, due to potential for error)

### **Assessing stature and length in special situations**

#### **1. For children unable to stand but generally normal in body development and growth, recumbent (lying down) length can be taken as follows:**

- Two people needed
- One person (parent or caregiver) holds crown of head against headboard
- Check head position -- Frankfort plane (same as for standing height: head positioned so that imaginary perpendicular line can be drawn from the board surface through the middle of ear canal opening across side of face and lower bone of eye socket)
- Trunk and pelvis aligned straight along measuring board
- Second person straightens the legs, holds ankles together with toes pointed directly upward
- Move footboard firmly against soles of **both** feet
- Measurement made to nearest 1/8 inch or 0.1 cm
- Repeat measurements until two agree within 1/4 inch or 0.5 cm (1/2 cm)

**2. For children with normal development but unable to stand, arm span can be measured. The arm span, when accurately measured, should equal stature 1:1 if growth is normal.**

- This method is appropriate for children older than age five, with involvement of the lower body only (e.g. some children with myelomeningocele or lower body paralysis)
- Arm span measurement requires two people to complete measurements
- The child extends both arms while the anthropometer or measuring rod is held across the back, extended from the tip of one middle finger to the other (Trahms, 1997)
- Arms held perpendicular to body
- Anthropometer touching the tip of extended middle fingers of each right and left hand
- Repeat measurements
- Provides information about rate of growth (arm span to height ratio about 1:1 with typical development)

NOTE: Arm span measurements can be plotted on the CDC charts for stature-for-age or length-for-age.



**Arm Span Measurement**

This is a photo of correct technique for arm span measurement. Note that the child's arms are perpendicular to his body and the anthropometer is touching the extended middle fingers of the right and left hands.

**3. For children unable to stand and/or have severe contractures, can measure sitting height**

- Use a stadiometer and surface for sitting (typically 50 cm x 40 cm x 30 cm, which can be rotated depending on size of child)
- Child sits on base as erect as possible
- Buttocks in contact with stadiometer board, as well as back and shoulder blades if possible, with back as straight erect as possible
- Legs hang freely, hands on thighs, knees pointed straight ahead
- Head positioned in same manner as standing height (Frankfort plane)
- Repeat measurement until two agree within 1/4 inch or 0.5 cm (1/2 cm)
- After measurement, subtract height of sitting surface from reading to estimate sitting height
- Can plot to indicate individual pattern of growth, even though percentile will not be indicated

#### 4. Segmental lengths: Upper arm length and lower leg length

- Some children for whom stature measurements are impossible can use segmental lengths (for example, upper arm length and lower leg length) to monitor growth
- Upper arm length is not as affected by a high spinal lesion as stature. It is recommended for children with spina bifida who are bedridden, wheelchair bound, or for other children unable to stand or stretch out on the length board (Cloud, 1997; Scott, 1997).
- Arm is straight along side of body
- Elbow is bent so that lower arm is at right angle (90 degrees) to upper arm
- Flexible metal or sturdy plastic measure tape is placed with tip at end point of shoulder bone (acromial process)
- Tape is brought straight down along upper arm to tip (point) of elbow
- Record measurement to nearest 1/8 inch or .1 cm
- Repeat measurements should fall within 1/4 inch or .5 (1/2 cm)
- For children with cerebral palsy or other conditions that cause or result in contractures, lower leg length can be measured using either a steel or plastic tape measure or an anthropometer. This is a difficult measurement to take and, when taken, should be used with children ages 6-18 years old (Cloud, 1997; Scott, 1997; Chumlea, Guo, Steinbaugh, 1994). Please see ???.
- These measurements may be plotted on the CDC charts for stature-for-age or length-for-age. Even if measurements fall below the 5th percentile, they establish a growth pattern over time. Reference data exist for some segmental lengths (e.g., knee height), however they are old and do not include children with special health care needs or children who are non-ambulatory (and therefore may have different growth patterns) (Chumlea, et al, 1994).



Cloud HH, Update on nutrition for children with special needs. Top Clin Nutr 1997; 13(1): 21-32.

Chumlea WC, Guo SS, Steinbaugh ML. Prediction of stature from knee height for black and white adults and children with application to mobility-impaired or handicapped persons. J Am Diet Assoc 1994; 94(12): 1385-1388.

Scott BJ, Artman H, Hill LA. Monitoring growth in children with special health care needs. Top Clin Nutr 1997; 13(1): 33-52.

Trahms C, Pipes P. Nutrition in Infancy and Childhood. 6th ed. 1997. Washington: McGraw-Hill.



## **E. Eating Disorders and Undernutrition**

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Although considered to be mental health disorders, eating disorders are remarkable for their association with nutrition-related problems. In anorexia nervosa, nutrition-related problems include refusal to maintain a minimally healthy body weight (e.g., 85% of that expected), dramatic weight loss, fear of gaining weight even though underweight, preoccupation with food, and abnormal food consumption patterns. Anorexia nervosa is 10 times more common in females, especially just after onset of puberty, peaking at ages 12-13 years.

Bulimia nervosa is an eating disorder with food addiction as the primary coping mechanism. In bulimia nervosa, problems include recurrent episodes of binge eating, a sense of lack of control over eating, and compensatory behavior after binge eating to prevent weight gain (e.g., self-induced vomiting, abuse of laxatives or diuretics, fasting). Body weight is often normal or slightly above normal.

Students identified to be at risk for undernutrition, failure-to-thrive or suspected eating disorders should be referred to a primary care provider for in-depth medical assessment. These nutrition-related conditions must be addressed cautiously and expediently. Aside from psychological disturbances, eating disorders can lead to serious electrolyte imbalances and dehydration. Long-term effects include osteoporosis and Cushing's Disease. Death can occur in extreme cases. Because of the serious nature of these potential conditions, it is imperative that school health personnel communicate observations and concerns directly (by letter, phone call or face-to-face) to the parent or guardian. Effective treatment for eating disorders involves medical and psychological treatment, nutritional counseling, and family and school support.

Keep in mind that a diagnosis of an eating disorder can be made only by a physician or an appropriate health care provider.

## F. Sample Resources

*This is not a comprehensive list and should not be interpreted as an endorsement by the Massachusetts Department of Public Health of any particular product or website.*

### School Resources

**Massachusetts Comprehensive School Health Manual** This tool is a comprehensive guide to school health services developed by the Massachusetts Department of Public Health's School Health Unit. <http://www.maclearinghouse.com/schoolhealthmanual.htm>

### **Resource Guide for Pediatric Overweight Treatment Services in Massachusetts**

This directory lists pediatric overweight treatment services available in Massachusetts and is recommended for health care providers and parents.

[www.maclearinghouse.com/PDFs/Health&Wellness/NP2020.pdf](http://www.maclearinghouse.com/PDFs/Health&Wellness/NP2020.pdf)

**The CDC Growth Charts for Children with Special Health Care Needs** This website provides information and tools for measuring children with special health care needs <http://depts.washington.edu/growth/cshcn/text/moduleprint.doc>

**School Health Index** The School Health Index developed by the Centers for Disease Control and Prevention is a self assessment and planning guide that schools can use to assess and improve its physical activity, healthy eating, tobacco-use prevention, and safety policies and programs. <http://www.cdc.gov/HealthyYouth/SHI/use.htm>

**Planet Health** This is an interdisciplinary curriculum focused on improving the health and well-being of 6th - 8th grade students while building and reinforcing skills in language, arts, math, science, social studies and physical education.

[http://www.hsph.harvard.edu/prc/proj\\_planet.html](http://www.hsph.harvard.edu/prc/proj_planet.html)

**Eat Well and Keep Moving** Eat Well and Keep Moving is a multi-faceted curriculum developed by the Harvard School of Public Health. It is designed to use existing school resources to reinforce important messages about nutrition and physical activity to elementary school students through a variety of learning environments – from the classroom, cafeteria, and gymnasium to the school hallways, the home, and even community centers.

<http://www.hsph.harvard.edu/nutritionsource/EWKM.html>

**EatFit** This tool developed by the University of California Expanded Nutrition and Physical Activity Program and partners is a goal-oriented curriculum designed to challenge middle school students in 5th, 6th, 7th, 8th and 9th grades to improve their eating and fitness choices. It is adaptable for other learners, including after school programs, 4-H and other youth development programs. <http://eatfit.ucdavis.edu/levelone/whatis.html>

**FoodPlay** This nutrition media company tours the nation's schools using the power of live theater and interactive resources to turn kids on to healthy eating and exercise habits.  
[www.foodplay.com](http://www.foodplay.com)

**Massachusetts Department of Elementary and Secondary Education** This Massachusetts Education website provides news on education related issues and relevant information on resources, educational technology and programs. [www.doe.mass.edu](http://www.doe.mass.edu)

**Action for Healthy Kids** AFHK is the only non-profit organization formed specifically to address the epidemic of overweight, undernourished and sedentary youth by focusing on changes at school. State teams are formed nationwide. There is a link to the Massachusetts Action for Healthy Kids team page. [www.actionforhealthykids.org](http://www.actionforhealthykids.org)

### **Health Care Provider Resources**

**Supplement to Pediatrics, December 2007** This website provides 4 key articles that have expert recommendations for the prevention, assessment and treatment of child and adolescent overweight and obesity [http://pediatrics.aappublications.org/content/vol120/Supplement\\_4/](http://pediatrics.aappublications.org/content/vol120/Supplement_4/)

***The Healthy Care for Healthy Kids Toolkit - Management and Treatment - Office Tools***  
This clinicians toolkit developed by the National Initiative for Children's Healthcare Quality (NICHQ), and the teams from NICHQ's Learning Collaborative *Healthy Care for Healthy Kids, a Collaborative to Prevent, Identify and Manage Childhood Overweight*, was designed to provides basics tools for primary care practice teams to deliver coordinated, integrated, and multidisciplinary services to both prevent overweight and improve care for children who are already overweight or at risk for overweight.  
[http://www.nichq.org/childhood\\_obesity/toolkit\\_prevention\\_office.html](http://www.nichq.org/childhood_obesity/toolkit_prevention_office.html)

### **Community Resources**

**VERB** This website provides resources from the Centers for Disease Control and Prevention's (CDC) national social marketing campaign focused on getting kids active. It has resources that communities can use to implement their own VERB campaign.  
<http://www.cdc.gov/youthcampaign/index.htm>

**WeCan!** Ways to Enhance Children's Activity & Nutrition is a national program designed for families and communities to help children maintain a healthy weight. The program focuses on *three* important behaviors: *improved* food choices, *increased* physical activity and *reduced* screen time. It has numerous resources for parents and children as well as information on how communities can become **WeCan!** Partners.  
<http://www.nhlbi.nih.gov/health/public/heart/obesity/wecan/index.htm>

**Share Our Strength's Operation Frontline®** This website provides nutrition education programs that connect families with food by teaching them how to prepare healthy, tasty meals on a limited budget. <http://www.operationfrontline-mass.com/>

### **Physical Activity Resources**

**The President's Council on Physical Fitness and Sports** This website includes publications and resources on physical activity as well as information on the President's Challenge which has incentives to help kids stay active and track progress with personal activity logs and presidential awards. [www.fitness.gov](http://www.fitness.gov)

**National Center on Physical Activity and Disability (NCPAD)** This website provides information and resources that can enable people with disabilities to become physically active. It includes educational resources, guidance on adapting gyms and other sites, handouts, writings from people with disabilities as well as nutrition information. [www.ncpad.org](http://www.ncpad.org)

**Special Olympics** Special Olympics is an international nonprofit organization dedicated to empowering individuals with intellectual disabilities to become physically fit. This website provides information on how to become involved in the Special Olympics. [www.specialolympics.org](http://www.specialolympics.org)

### **Diabetes Resources**

**National Diabetes Education Program** This organization translates the latest science and spreads the word that diabetes is serious, common, and costly, yet *controllable* and, for type 2, *preventable*. The website provides publications, guidelines, tools, posters and other resources to prevent and manage diabetes. It has materials for all age groups as well as for professionals. Information is available in English and in Spanish. [www.ndep.nih.gov](http://www.ndep.nih.gov)

**American Diabetes Association** This organization funds research to prevent, cure and manage diabetes; delivers services to communities; and provides objective and credible information on the prevention and management of diabetes. The website has materials for consumers and professionals as well as a section for parents and kids. [www.diabetes.org](http://www.diabetes.org)

### **Eating Disorder Resources**

**MEDA** MEDA is a Massachusetts non-profit organization dedicated to the prevention and treatment of eating disorders and disordered eating. They provide educational presentations and have support groups for individuals with eating disorders/disordered eating. [www.medainc.org](http://www.medainc.org)

**Eating Disorder Referral and Information Center** This organization is dedicated to the prevention and treatment of eating disorders. The website provides research articles and other

professional information on eating disorders as well as links to treatment resources nationwide. [www.edreferral.com](http://www.edreferral.com)

**National Association of Anorexia Nervosa & Associated Disorders** This organization is the oldest eating disorder organization in the nation. In addition to running a crisis hotline, the organization distributes listings of therapists, hospitals and informational materials and sponsors groups, conferences, and research. [www.anad.org](http://www.anad.org)

### **Professional Associations**

**American Association for Health, Physical Education, Recreation and Dance** AAPHERD promotes and supports leadership, research, education, and best practices in the professions that support creative, healthy, and active lifestyles. [www.aahperd.org](http://www.aahperd.org) The Massachusetts affiliate is MAHPERD <http://www.ma-hperd.org/>

**The American Dietetic Association** The ADA represents food and nutrition professionals across the US. The association is committed to improving the nation's health and advancing the profession of dietetics through research, education and advocacy [www.eatright.org](http://www.eatright.org)

**The American Academy of Pediatrics** This organization represents pediatricians and is committed to the attainment of optimal physical, mental, and social health and well-being for all infants, children, adolescents, and young adults [www.aap.org](http://www.aap.org)

### **General Resources and Other Websites**

**Mass in Motion** This Massachusetts Department of Public Health website provides healthy eating, physical activity, obesity prevention information and resources for use in schools, communities, worksites and in the home. <http://www.mass.gov/massinmotion/>

**Massachusetts Health Promotion Clearinghouse** This clearinghouse, supported by the Massachusetts Department of Public Health provides free health promotion materials such as brochures, posters, and fact sheets free-of-charge to Massachusetts residents and health and social service providers. [www.maclearinghouse.com](http://www.maclearinghouse.com)

**Team Nutrition** An initiative of the USDA Food and Nutrition Service, Team Nutrition provides information on nutrition education, healthy eating and physical activity with support and materials for teachers and foodservice professionals. [www.fns.usda.gov/tn](http://www.fns.usda.gov/tn)

**HealthierUS** This website is part of a broad presidential agenda designed to help Americans, especially children, live longer, better, and healthier lives and provides information on physical fitness, nutrition and making healthy choices. [www.healthierus.gov](http://www.healthierus.gov)

**My Pyramid** This USDA website provides resources and information to use in developing education materials and understanding MyPyramid. [www.mypyramid.gov](http://www.mypyramid.gov)

**Bright Futures** This health promotion initiative of the national Maternal and Child Health Bureau dedicated to the principle that every child deserves to be healthy and that optimal health involves a trusting relationship between the health professional, the child, the family, and the community as partners in health practice. The website has tools and resources on nutrition and physical activity for children. [www.brightfutures.org](http://www.brightfutures.org)

**Robert Wood Johnson Foundation** This not for profit organization has made a commitment to support obesity prevention. The website has a number of obesity prevention publications and useful resources. <http://www.rwjf.org/childhoodobesity/>

### **Resources for Kids**

**Kids' Health** Kids Health developed by Nemours Foundation Center for Children's Health Media is an interactive, educational, and fun website that provides kids and parents' perspective, advice, and comfort about a wide range of physical, emotional, and behavioral issues that affect children and teens. [http://kidshealth.org/kid/stay\\_healthy/fit/overweight.html](http://kidshealth.org/kid/stay_healthy/fit/overweight.html)

**YourSELF** YourSELF is a United States Department of Agriculture (USDA) Team Nutrition publication developed especially for middle school students. [www.fns.usda.gov/tn/tnrockyrun](http://www.fns.usda.gov/tn/tnrockyrun)

**BAM! BAM! Body and Mind** developed by the Centers for Disease Control and Prevention is an interactive website that gives kids aged 9-13 the information they need to make healthy lifestyle choices using interactive, educational, and fun activities. [www.bam.gov](http://www.bam.gov)

**The Center for Young Women's Health** This website developed by the Children's Hospital in Boston provides teen girls and young women with health information, information on conference and educational programs, and links to expert medical care at Children's Hospital [http://www.youngwomenshealth.org/nutrition\\_menu.html](http://www.youngwomenshealth.org/nutrition_menu.html)

**Young Men's Health** This website developed by the Children's Hospital in Boston provides carefully researched health information to teenage boys and young men. It is designed to help teen boys improve their understanding of normal health and development, as well as of specific diseases and conditions. <http://www.youngmenshealthsite.org/>

**Smart Mouth** This interactive website developed by the Center for Science in the Public Interest has games, information on how the food industry's drive for profit affects what kids eat, a calorie meter that helps kids see how their favorite foods stack up, and other fun information about healthy eating and snacking. <http://www.smart-mouth.org>

**EmpowerME.** This website developed by the Alliance for a Healthier Generation was designed to inspire kids to eat healthier and move more. It has ideas and tips for eating healthy and being active, resources to share their story with other kids, celebrity videos, EmpoweME e-news updates, invitations to exclusive events, and contests. [www.empowerme2b.org](http://www.empowerme2b.org)

**Kidnetic** This website developed by the IFIC Foundation, the educational arm of the International Food and Information Council supported by companies and organizations representing the broad-based food, beverage, and agricultural industries. The website is designed for kids aged 9-12 and their families and also includes a Leader's Guide which is a lesson-based curriculum guide for health professionals and educators to use when working with patients and students. [www.kidnetic.com](http://www.kidnetic.com)

**Powerful Bones. Powerful Girls** This website developed by the Office on Women's Health within the U.S. Department of Health and Human Services is designed for girls ages 9-12 and includes games, information, healthy eating and physical activity tips, downloadable tools and other resources to help young girls establish lifelong, healthy habits that build and maintain strong bones. [www.cdc.gov/powerfulbones](http://www.cdc.gov/powerfulbones)